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10/573,799	03/28/2006	Jochen Laubender	3614	7707

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EXAMINER	
COLEMAN, KEITH A	
ART UNIT	PAPER NUMBER
3747	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/573,799	LAUBENDER, JOCHEN	
	Examiner	Art Unit	
	KEITH COLEMAN	3747	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 January 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5 and 7-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 7-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 7-11 and 13-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Ueda et al. (US Patent No. 6,340,016).

With regards to claim 1, the patent to Ueda et al. discloses a device (21) for controlling an internal combustion engine (1), characterized in that a calculation means (Col. 7, Lines 10-55), before a start of the engine (1, Col. 7, Lines 30-36), recognizes a possible self-ignition operating state (S26, Figure 3) as a function of operating parameters and ascertains suitable control parameters for preventing this possible self-ignition operating state (Abstract), **and means for varying an injection (via controller 21) of fuel into a cylinder such that fuel injection does not occur until, on starting, the cylinder entering a compression phase (See Figure 9).**

With regards to claim 2, the patent to Ueda et al. further discloses a method for controlling an internal combustion engine (1), **comprising the steps of: recognizing,** before a start of the engine (1, Col. 7, Lines 30-36), as a function of operating parameters (Col. 7, Lines 9-25), a possible self- ignition operating state is recognized,

and **ascertaining** control parameters suitable for preventing this possible self- ignition operating state are ascertained (Abstract) **and varying an injection of fuel (via controller 21) into a cylinder such that fuel injection does not occur until, on starting, the cylinder entering a compression phase (See Figure 9).**

With regards to claim 3, the patent to Ueda et al. further discloses a device (21) as defined by claim 1, **wherein said means (via controller 21) for varying is configured to vary** an injection device (See Step S50 and S58) **as a function of the control parameters (i.e. dependent on T, position, pressure, and rpm, See Figures 4-9)**.

With regards to claim 4, the patent to Ueda et al. further discloses a device (21) as defined in claim 1, **wherein said calculation means is configured to take into account** (Col. 7, Lines 1-25), at least the position of a cylinder that on starting is the first to enter compression or begin an intake stroke (Col. 13, Lines 10-25) and a variable that represents a combustion chamber temperature (T) are taken into account as operating parameters (Col. 7, Lines 13-17) **for ascertaining the control parameters (i.e. dependent on T, position, pressure, and rpm, See Figures 4-9)**.

With regards to claim 7, the patent to Ueda et al. further discloses the device (21) defined in claim 1, **wherein said means for varying is configured to vary** the rpm (i.e. stopping or continuing cranking speed, See S46 in Figure 4 and in Figure 9 the

cranking speed is increased, See Col. 13, Lines 10-25 and Lines 41-53) of the starter (6) such that the combustion chamber temperature (T) remains below a critical temperature threshold (Col. 13, Lines 10-25 and Lines 41-53). Using broadest reasonable interpretation, it should be noted that "varied" includes actuation and forward rotation of the starter motor's shaft, which both inherently varies the rpm.

With regards to claim 8, the patent to Ueda et al. further discloses the device (21) defined in claim 1, **wherein said means for varying (21) is configured to vary** the rpm of the starter (6, S120) such that the combustion chamber pressure remains below a critical pressure threshold (Col. 14, Lines 27-43).

With regards to claim 9, the patent to Ueda et al. further discloses the device (21) defined in claim 1, **wherein said means for varying (via controller 21) is configured to increase (i.e. injecting fuel as opposed to not injecting fuel)** an injection quantity is increased such that the combustion chamber temperature remains below, or drops below, a critical temperature threshold (Figure 10, S122, Col. 16, Lines 34-55).

With regards to claim 10, the patent to Ueda et al. further discloses comprising varying an injection device (i.e. fuel injectors) as a function of the control parameters (i.e. T, position, and RPM).

With regards to claim 11, the patent to Ueda et al. further discloses comprising taking into account at least the position of a cylinder (See Figures 9-12) that on starting is the first to enter compression or begin an intake stroke and a variable that represents a combustion chamber temperature (T) as operating parameters for ascertaining the control parameters (i.e. T, position, and RPM).

With regards to claim 13, the patent to Ueda et al. further discloses comprising varying the rpm of the starter (See Figure 16) such that the combustion chamber temperature remains below a critical temperature threshold (See Figures 9 and 10).

With regards to claim 14, the patent to Ueda et al. further discloses comprising varying the rpm (See Figure 16) of the starter such that the combustion chamber pressure remains below a critical pressure threshold (See Figures 9 and 10).

With regards to claim 15, the patent to Ueda et al. further discloses comprising increasing an injection quantity (See Figures 9-16) such that the combustion chamber temperature remains below, or drops below, a critical temperature threshold (T).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda et al. (US Patent No. 6,340,016) in view of Akimoto (US Patent No. 5,676,108).

With regards to claims 5 and 12, Ueda et al. discloses all the limitations of claim 4. Ueda et al. does not disclose an intake air temperature is taken into account as a control parameter. The patent to Akimoto discloses a device (20), **wherein said**

calculation means is configured to take into account (Col. 2, Lines 57-64), an intake air temperature (Col. 4, Lines 5-10, Col. 5, Lines 53-57) **for ascertaining the control parameters**. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide the ECU of Ueda et al. with the air intake parameter in view of the teaching to Akimoto, in order to determine when pre-ignition occurs under different engine operating conditions (Col. 5, Lines 51-57).

Response to Arguments

Applicant's arguments filed 1/28/2008 have been fully considered but they are not persuasive.

Applicant's Arguments

Udea et al. do not disclose an apparatus or method that prevents self-ignition at engine start by varying the injection of fuel into a cylinder such that fuel injection does not occur until the cylinder entering a compression phase or an intake phase has passed its top dead center• To the contrary, 12-15 indicate injection of fuel before the cylinder reaches top dead center (as indicated by the letter "A"). Regarding column 16, lines 1-25 in Ueda, the reference patent does not disclose a delay of fuel injection until after the cylinder has passed top dead center. Rather, the patent discloses that, as a condition relating to the injection timing, it is necessary for the injection timing to be kept

to a later angle than the timing at which the intake valve is closed, as shown in FIG. 12. FIG. 12 indicated an injection occurring before the cylinder reaches top dead center•

Udea et al. does not teach or suggest an apparatus or method as recited in claims 1 and 2, as amended, for reasons described in the rejection under 35 U.S.C. 102(b). Similarly, Akimoto does not teach or suggest an apparatus or method that prevents self-ignition at engine start by varying the injection of fuel into a cylinder such that fuel injection does not occur until the cylinder entering a compression phase or an intake phase has passed its top dead center. Applicant respectfully requests that the rejection of claim 5 under 35 U.S.C. 103(a) be withdrawn.

New claims 10-15 depend from claim 2 and recite method claim that mirror claims 3-5 and 7-9. No new matter has been added.

Examiner's Response to Arguments

With regards to Applicant's first argument and upon further examination of Ueda et al. (US Patent No. 6,340,016), the claimed subject matter is clearly disclosed in Figures 6-16 and as explained above in this action. Thus, it is clear that Ueda et al. discloses the claimed subject matter.

With regards to Applicant's second argument, Examiner respectfully disagrees. On Col. 9, Lines 55-65, Ueda et al. clearly states " In other words, the **knock learned**

value Kk assumes a value corresponding to the conditions, under which **knocking** (i.e. auto-ignition) occurs in the engine 1, and because for the same engine, the conditions under which knocking occurs vary in correspondence with the octane level of the gasoline used (Regular or High-Octane), the knock learned value Kk can be thought of as an index showing the octane level of the gasoline used." The Ueda et al. disclosure of knocking and Applicant's claimed subject matter of self-ignition is deemed as similar subject matter. In addition, Akimoto clearly discloses knocking or off-firing, "It is therefore an object of the present invention to provide a combustion control system and method capable of **preventing the off-firing cylinder** from being fired unnecessarily when ignition is applied simultaneously to two different cylinders." on Col. 1, Lines 50-55 and further bolsters the point of using an air intake parameter on Col. 3, Lines 35-45," Next, the program goes to S102 where miscellaneous increment correction coefficients COEF such as ones for engine stating, ones for cold starting, ones for wide open throttle and others, are determined based on the output values from the throttle opening angle sensor 12 and the coolant temperature sensor 15 and then at S103 the fuel injection amount per one injection GF is calculated based on the **air amount per on cylinder QP**,". In view that the two patents are indeed analogous art and both provide relevant teachings, the 103 rejection still holds.

With regards to the newly added claims, Applicant has agreed that the claimed subject matter mirrors claims 3-5 and 7-9. In view of the rationale used above, it is clear that the subject matter in the newly added claims doesn't overcome the prior art.

In closing, Examiner believes that the claimed subject matter is clearly anticipated or rendered obvious over the prior art as explained in this action. Thus, the action is made final.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEITH COLEMAN whose telephone number is (571)270-3516. The examiner can normally be reached on 5:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Cronin can be reached on (571)272-4536. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KAC
/K. C./
Examiner, Art Unit 3747

/Stephen K. Cronin/
Supervisory Patent Examiner, Art Unit 3747